

CYCLIC SHRINKAGE OF A TEMPLATED 3D NETWORK MATERIAL

Abstract of the Disclosure

Methods are provided for producing a shrunken replica or a shrunken inverse replica of a multicontinuous structure. In one embodiment, the method comprises (1) infiltrating a first multicontinuous structure with a first fluid material which can be immobilized and shrunken, wherein the first multicontinuous structure comprises at least a first phase and a second phase which is immiscible with the first phase, and the infiltration displaces the second phase in the first multicontinuous structure to form a second multicontinuous structure which comprises at least the first phase and a third phase which consists of the first fluid material; (2) immobilizing the infiltrated first fluid material in the second multicontinuous structure; (3) removing the first phase from the second multicontinuous structure; and (4) shrinking (e.g., by a pyrolysis process) the third phase of the second multicontinuous structure, to produce an isotropically shrunken inverse replica of the first multicontinuous structure.